

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Rodney B. Croteau and Attorney Docket No.: WSUR117920
Charles C. Burke

Title: GERANYL DIPHOSPHATE SYNTHASE LARGE SUBUNIT, AND
METHODS OF USE

PRELIMINARY AMENDMENT

Seattle, Washington 98101

TO THE COMMISSIONER FOR PATENTS:

Please enter the following Preliminary Amendment for the patent application filed herewith, which is a divisional application of U.S. Patent Application No. 09/420,211.

In the Specification:

Please amend the paragraph beginning on page 1, line 7 as follows:

The present application is a divisional of prior Application No. 09/420,211, filed October 18, 1999, which claims benefit of priority from International Patent Application No. PCT/US98/21772, filed on October 15, 1998, which claims benefit of priority from United States Patent Application No. 08/951,924, filed on October 16, 1997, (now issued as U.S. Patent No. 5,8876,964), priority from the filing date of each of which is hereby claimed under 35 U.S.C. § 120 and each of which are incorporated herein by reference.

In the Claims:

Please cancel Claims 1-9, 19-32, and 41.

10. An isolated, recombinant geranyl diphosphate synthase large subunit protein.
11. An isolated, recombinant, angiosperm geranyl diphosphate synthase large subunit protein of Claim 10.
12. An isolated, recombinant, gymnosperm geranyl diphosphate synthase large subunit protein of Claim 11.
13. An isolated, recombinant, essential oil plant geranyl diphosphate synthase large subunit protein of Claim 10.

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14. An isolated, recombinant, Lamiaceae, geranyl diphosphate synthase large subunit protein of Claim 10.

15. An isolated, recombinant, *Mentha* geranyl diphosphate synthase large subunit protein of Claim 10.

16. An isolated, recombinant, *Mentha piperita* geranyl diphosphate synthase large subunit protein of Claim 10.

17. An isolated, recombinant, *Mentha piperita* geranyl diphosphate synthase large subunit protein consisting of the amino acid sequence set forth in SEQ ID NO:2.

18. An isolated, recombinant geranyl diphosphate synthase protein comprising an isolated, recombinant geranyl diphosphate synthase large subunit protein and an isolated, recombinant geranyl diphosphate synthase small subunit protein.

33. A method of imparting or enhancing the production of geranyl diphosphate synthase in a host cell comprising introducing into the host cell an isolated, recombinant geranyl diphosphate synthase large subunit protein.

34. A method of treating cancer in a mammalian host comprising introducing into a cancerous cell a geranyl diphosphate synthase large subunit protein, a geranyl diphosphate synthase small subunit protein and a monoterpene synthase protein, said monoterpene synthase protein being capable of converting geranyl diphosphate to a monoterpene having anti-cancer properties.

35. The method of Claim 34 wherein said geranyl diphosphate synthase small subunit protein is from an essential oil plant species, said geranyl diphosphate synthase large subunit protein is from a plant species of the family Lamiaceae, and said monoterpene synthase is limonene synthase.

36. The method of Claim 34 wherein said geranyl diphosphate synthase small subunit protein and said geranyl diphosphate synthase large subunit protein are both from a plant species of the family Lamiaceae, and said monoterpene synthase is limonene synthase.

37. The method of Claim 34 wherein said geranyl diphosphate synthase small subunit protein and said geranyl diphosphate synthase large subunit protein are both from a *Mentha* species and said monoterpene synthase is limonene synthase.

38. A method of treating cancer in a mammalian host comprising introducing into a cancerous cell a nucleic acid sequence encoding a geranyl diphosphate synthase large subunit protein, a nucleic acid sequence encoding a geranyl diphosphate synthase small subunit protein, and a nucleotide sequence encoding a monoterpene synthase protein, under conditions that enable expression of said large subunit, small subunit and monoterpene synthase proteins, said monoterpene synthase protein being capable of converting geranyl diphosphate to a monoterpene having anticancer properties.

39. The method of Claim 38 wherein said geranyl diphosphate synthase small subunit protein and said geranyl diphosphate synthase large subunit protein are both from a plant species of the family Lamiaceae, and said monoterpene synthase is limonene synthase.

40. The method of Claim 38 wherein said geranyl diphosphate synthase small subunit protein and said geranyl diphosphate synthase large subunit protein are both from a *Mentha* species and said monoterpene synthase is limonene synthase.

REMARKS

Please enter the foregoing claim amendments and amendments to the Specification before examining the application.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE AUGUST 16, 2001

In the Specification:

The paragraph beginning on page 1, line 7 has been amended as follows:

The present application is a divisional of prior Application No. 09/420,211, filed October 18, 1999, which claims benefit of priority from [copending,] International Patent Application No. PCT/US98/21772, filed on October 15, 1998, which claims benefit of priority from United States Patent Application No. 08/951,924, filed on October 16, 1997, (which issued as U.S. Patent No. 5,8876,964), priority from the filing date of each of which is hereby claimed under 35 U.S.C. § 120, and each of which are incorporated herein by reference.

In the Claims:

Claims 1-9, 19-32, and 41 have been cancelled.

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